1 Introduction

2 Description of the model. Field theoretic formulation

$$S_v(v^{'},v) = v^{'}D_v v^{'}/2 + v^{'}\{-\nabla_t + \nu_0\partial^2\}v + \omega_0 v_i^{'}(\partial_i\theta)\partial^2\theta \tag{1}$$

$$S(v,v^{'},\theta,\theta^{'}) = S_v(v^{'},v) + \theta^{'}D_\theta\theta^{'}/2 + \theta^{'}\{-\nabla_t + k_0\partial^2\}\theta \tag{2}$$

Feynmam rules.

$$\langle v,v^{'}\rangle_0 = \langle v^{'},v\rangle_0^T = (-i\omega + \nu_0 k^2)^{-1} \tag{3}$$

$$\langle v,v\rangle_0 = P_{ij}D_0 k^{4-d-y}(-i\omega + \nu_0 k^2)^{-2} \tag{4}$$

$$\langle \theta,\theta^{'}\rangle_0 = \langle \theta^{'},\theta\rangle_0^T = (-i\omega + \nu_0 k^2)^{-1} \tag{5}$$

$$\langle \theta,\theta\rangle_0 = K_0 k^{2-d-y}(-i\omega + \nu_0 k^2)^{-2} \tag{6}$$

$$\langle v_i^{'},\theta,\theta\rangle_0 = -i[p_i k^2 + p^2 k_i] \tag{7}$$

p,k - momentum of field θ.

$$\langle \theta^{'},v_i,\theta\rangle_0 = +ip_i \tag{8}$$

p - momentum of field θ.

$$\langle v_i^{'},v_k,v_s\rangle_0 = -i[p_k\delta_{is} + p_s\delta_{ik}] \tag{9}$$

p - momentum of field $v^{'}$.

3 Canonical dimensions, UV divergences and the renormalization

F	ψ	$\psi^\dagger$	v	λ_0,λ	τ_0,τ	m,μ,Λ	g_0^2	ω_0	g^2,ω,α,a_0,a
d_F^k	$\frac{d-2}{2}$	$\frac{d+2}{2}$	-1	-2	2	1	$2-d$	ξ	0
d_F^ω	0	0	1	1	0	0	2	0	0
d_F	$\frac{d-2}{2}$	$\frac{d+2}{2}$	1	0	2	1	$6-d$	ξ	0